We claim:

1. A process for the preparation of alkylaromatic compounds by reacting C_{3-30}-olefins, or alcohols from which C_{3-30}-olefins are formed under the reaction conditions, with an aromatic hydrocarbon in the presence of an alkylation catalyst, which comprises carrying out the reaction in a reactor cascade of at least two reactors, where each of the reactors comprises the alkylation catalyst, at least 80% of the aromatic hydrocarbon are fed into the first reactor of the reactor cascade, and at least 40% of the olefins are intermediately fed in after the first reactor.

2. A process as claimed in claim 1, wherein the reactor cascade has at least three reactors, and the olefin is intermediately fed in before each of the reactors.

3. A process as claimed in claim 1 or 2, wherein in each case equal proportions of the olefin are fed into each reactor.

4. A process as claimed in claim 1 or 2, wherein the olefin is intermediately fed in before each of the reactors and the amount of olefin intermediately fed in in each case is controlled such that, in each reactor, the same incremental productivity is achieved, based on the respective amount of catalyst.

5. A process as claimed in any of claims 1 to 4, wherein the order of the reactors within the cascade is changed at time intervals such that each reactor assumes each of the positions within the cascade for the same period of time.

6. A process as claimed in any of claims 1 to 5, wherein the reactors in the cascade each have the characteristics of a stirred-tank reactor.

7. A process as claimed in any of claims 1 to 6, wherein the alkylation is carried out in the liquid phase at temperatures in the range from 100 to 250°C.

8. A process as claimed in any of claims 1 to 7, wherein the alkylation catalyst is a heterogeneous catalyst chosen from acidic clays, acidic ion exchangers, acidic metal oxides, sulfated metal oxides, supported heteropolyacids and zeolites.

9. A process as claimed in any of claims 1 to 8, wherein C_{10-12}-olefins are used which have an average degree of branching of at least 0.5.

10. A process as claimed in claim 9, wherein the C_{10-12}-olefins are obtained by reacting a C_4-olefin mixture over a metathesis catalyst to prepare an olefin mixture comprising 2-pentene and/or 3-hexene, and optionally separating off 2-pentene and/or 3-hexene, and
dimerizing the resulting 2-pentene and/or 3-hexene in the presence of a dimerization catalyst to give a mixture comprising C_{10-12}-olefins, optionally followed by separating off the C_{10-12}-olefins and separating off 5 to 30% by weight, based on the separated-off C_{10-12}-olefins, of low-boiling constituents of the C_{10-12}-olefins.

11. A process for the preparation of alkylarylsulfonates by

a) reacting a C_4-olefin mixture over a metathesis catalyst to prepare an olefin mixture comprising 2-pentene and/or 3-hexene, and optionally separating off 2-pentene and/or 3-hexene,

b) dimerizing the 2-pentene and/or 3-hexene obtained in stage a) in the presence of a dimerization catalyst to give a mixture comprising C_{10-12}-olefins, optionally separating off the C_{10-12}-olefins and separating off 5 to 30% by weight, based on the separated-off C_{10-12}-olefins, of low-boiling constituents of the C_{10-12}-olefins,

c) reacting the C_{10-12}-olefin mixtures obtained in stage b) with an aromatic hydrocarbon in the presence of an alkylation catalyst to form alkylaromatic compounds, where, prior to the reaction, 0 to 60% by weight, based on the C_{10-12}-olefin mixtures obtained in stage b), of linear olefins may additionally be added,

d) sulfonating the alkylaromatic compounds obtained in stage c) and neutralizing them to give alkylarylsulfonates, where, prior to the sulfonation, 0 to 60% by weight, based on the alkylaromatic compounds obtained in stage c), of linear alkylbenzenes may additionally be added if no such addition has taken place in stage c),

e) optionally mixing the alkylarylsulfonates obtained in stage d) with 0 to 60% by weight, based on the alkylarylsulfonates obtained in stage d),

of linear alkylarylsulfonates, if no such additions have taken place in stages c) and d),

wherein the reaction in stage c) is carried out in accordance with a process as claimed in any of claims 1 to 8.